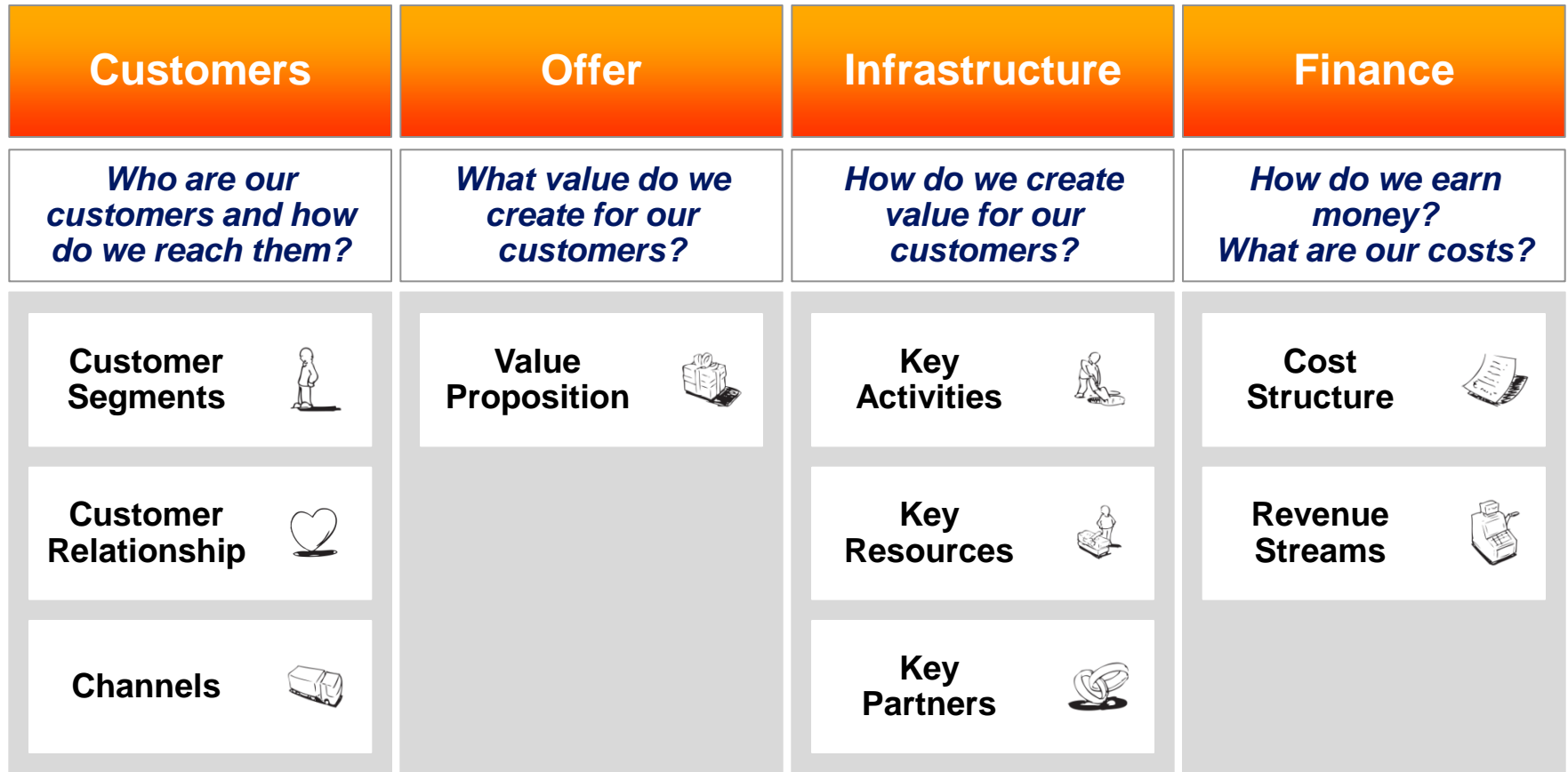


Agenda

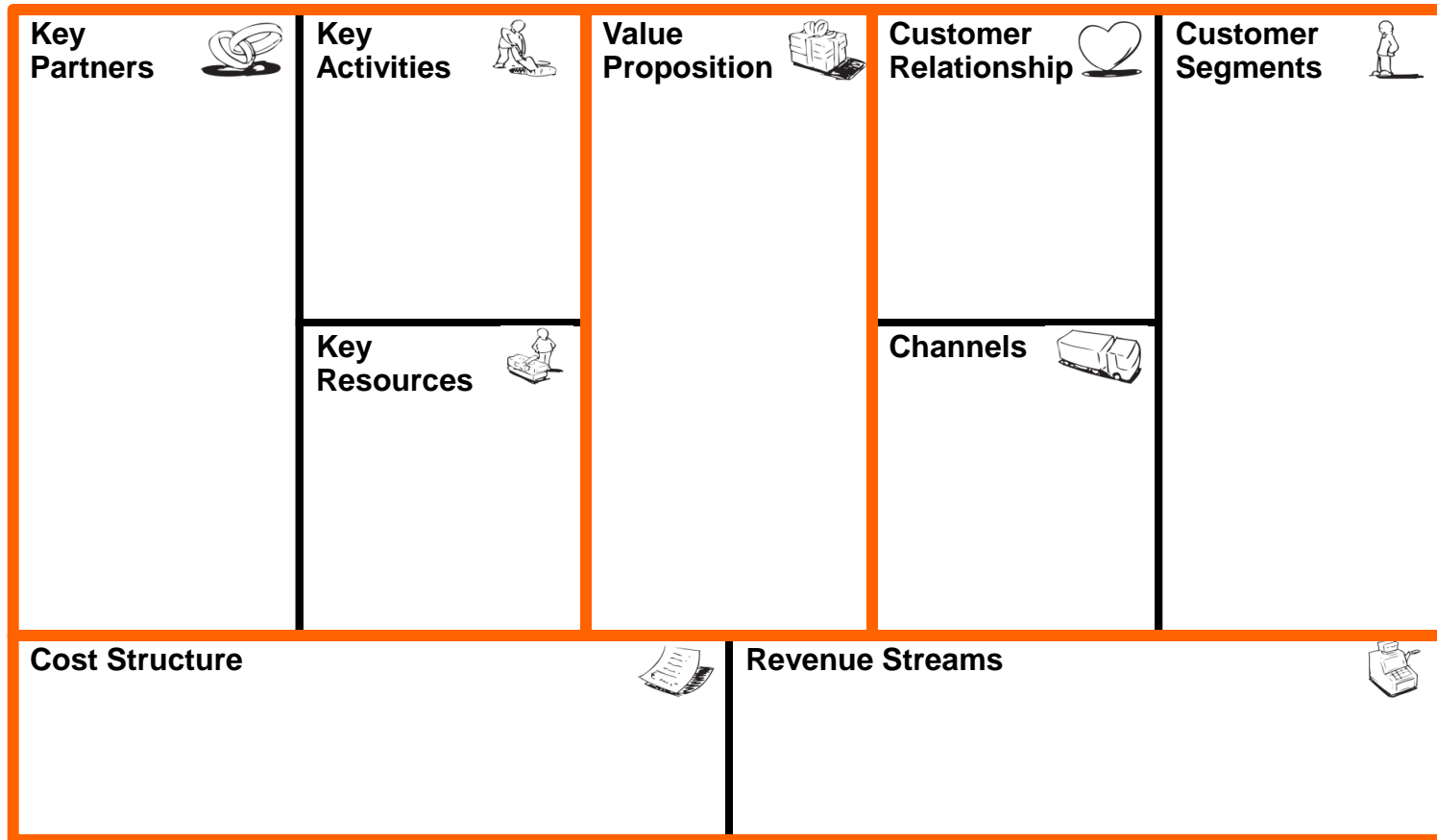
| When | What | Who |
|---------------|----------------------------------------------------------------------------------------------|------------------------------|
| 09:00 – 10:30 | Lecture: <i>“Smart energy components and systems: from concept to realization”</i> | Prof. Dr.-Ing. Kai Strunz |
| 10:30 – 10:45 | <i>Coffee break</i> | <i>all</i> |
| 10:45 – 11:30 | Introduction into business model generation & group work | Sebastian Knab MSc. |
| 11:30 – 13:00 | First phase of group work: Development of project idea | all S. Knab |
| 13:00 – 14:00 | <i>Lunch</i> | <i>all</i> |
| 14:00 – 14:30 | Second phase of group work: Preparation of final presentation | all |
| 14:30 – 15:30 | Final presentations and discussions | all Prof. Strunz |

What is a business model?

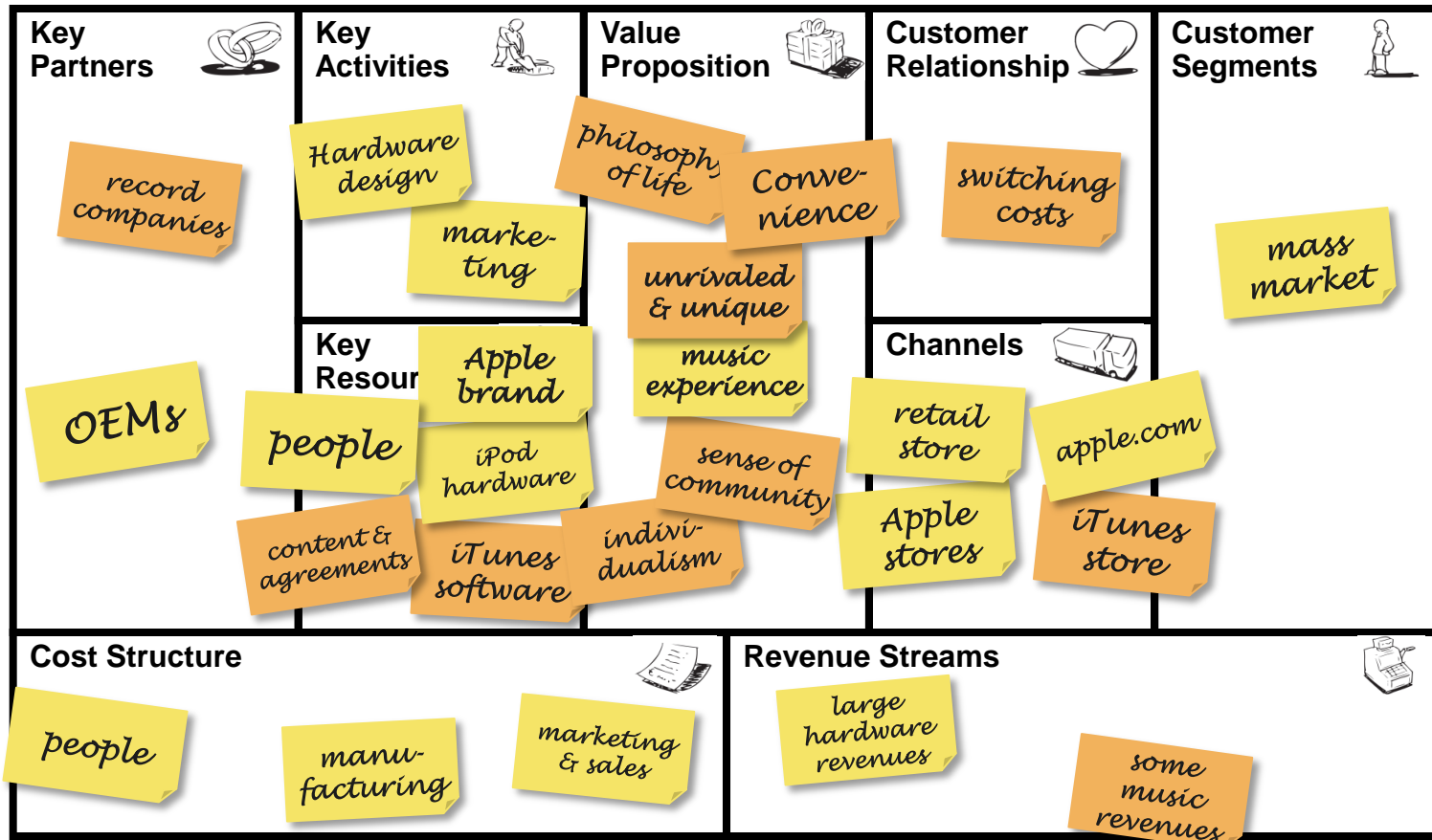


Source: Own figure based on: Osterwalder, A., Pigneur, Y. (2010): Business Model Generation

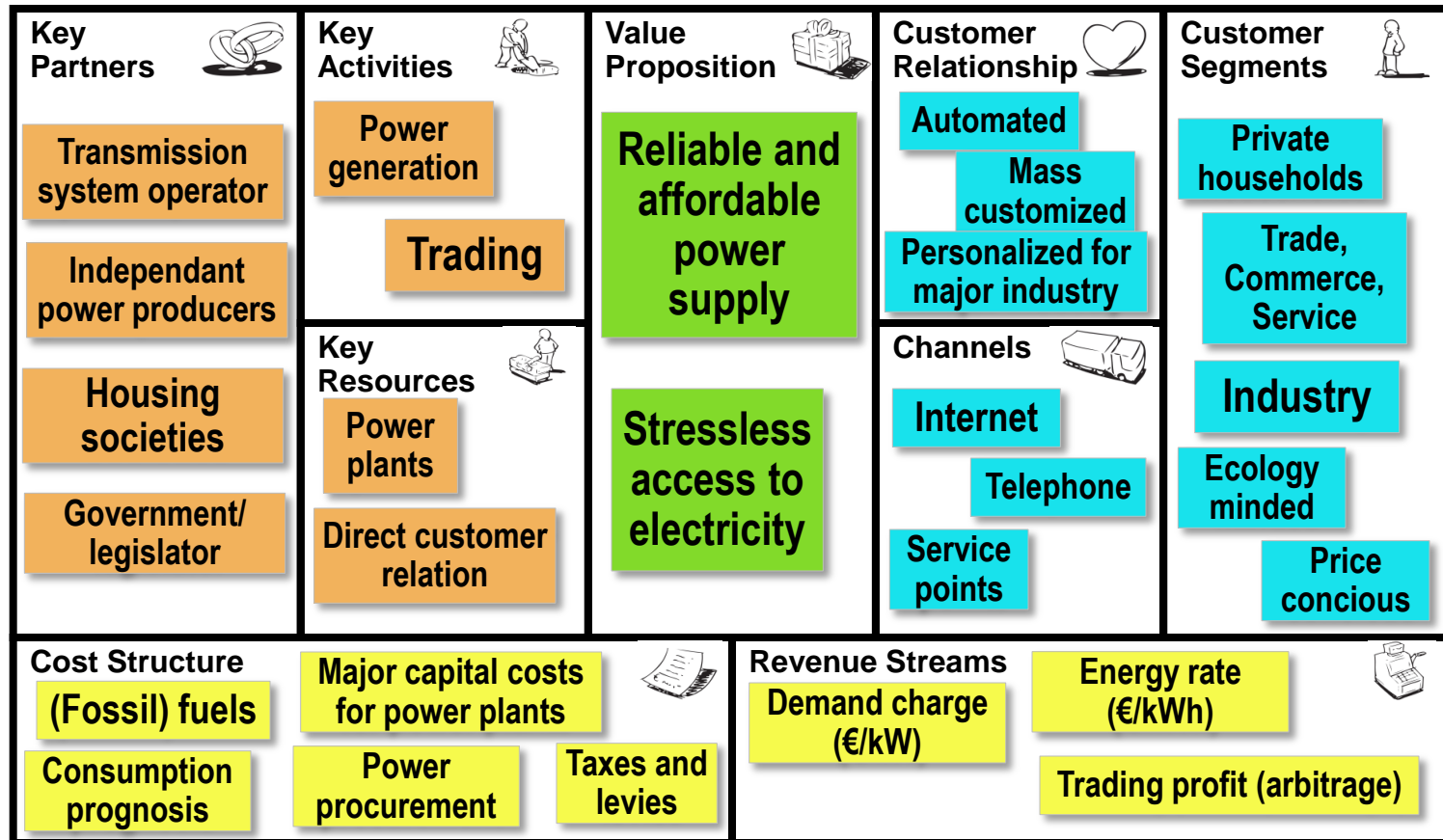
The 9 business model building blocks



Example: Apple iPod/iTunes business model



Example: Traditional business model of an electric utility



Brainstorming von Geschäftsmodellbausteinen

Schlüssel-partner

Stabilitätsdienstleister
Konfigurationsdienstleister
Zulieferer, VU
IKT-Branche
Haushaltsgerätehersteller
Internet-Dienstleister
Speicherbesitzer

Schlüssel-aktivitäten

Partnernetzwerk
Vervollständigen
Optimieren
Betrieb einer E-Bike-Sharing Flotte
Verkauf von Netze statt kWh
Re-Integration der Lieferkette
Smart Home Produkt
Echtzeit Kommunikation mit Festen Service Level
Netz öffentlicher Steckdosen mit Authentifizierungssystem
Produkt-Innovation
Zählen
Steuerebene Lasten
Daten schützen
Daten sicherheit
Kostensenkung
ben Zähler-Ablesen
Kosten sparen bei Wartung der Netze

Schlüssel-ressourcen

SR
"First Mover"
SR
"Strommix-on-demand"
SR
Prognosedienst (as a Service) (Entsorgung & Last)
Vorgeschau
Vorgeschau
Einsparung - Kosten
Netzwerke (E-Brater) (Tollfree Network)
Pre-paid Strom vom Supermarkt
SR
Unabhängigkeit (auch von Ecu)
Wir managen Dein "Haus"
SR
Vorgeschau
Vorgeschau aus einer Hand
Wasser - Smart - Wasser - Gas - Internet - Telefon - TV
Personalisierte/individuelle Tarife

Kunden-beziehung

Online-Community
"Wer spart an meinem Strom"
Energie marktes als Partner
Kunden sagen nach "Nutzenaspekt"

Kunden-segmente

Niedrigpreis / Preisbewusst
Kunden im Gebäudebestand
Kunden mit wenig Zeit
technisch-affine Kunden
Umweltbewusste Kunden
Kostenbewusste Kunden

Vertriebs-kanäle

Supermarkt
App Stores
Media Markt, ...
E-Handels-Plattform f. P-Kunden








Geschäftsmodell

Flat-Rate-Strom
Erlöse aus anderen Energiemärkten
Erlöse aus CO₂-Zertifikaten für Effizienzmaßnahmen
Handel mit Speicherenergie
Erträge aus Preisspreizung

Kostenstruktur

Kosten für Technik
Technik für Produkte
Kosten sparen bei Wartung der Netze

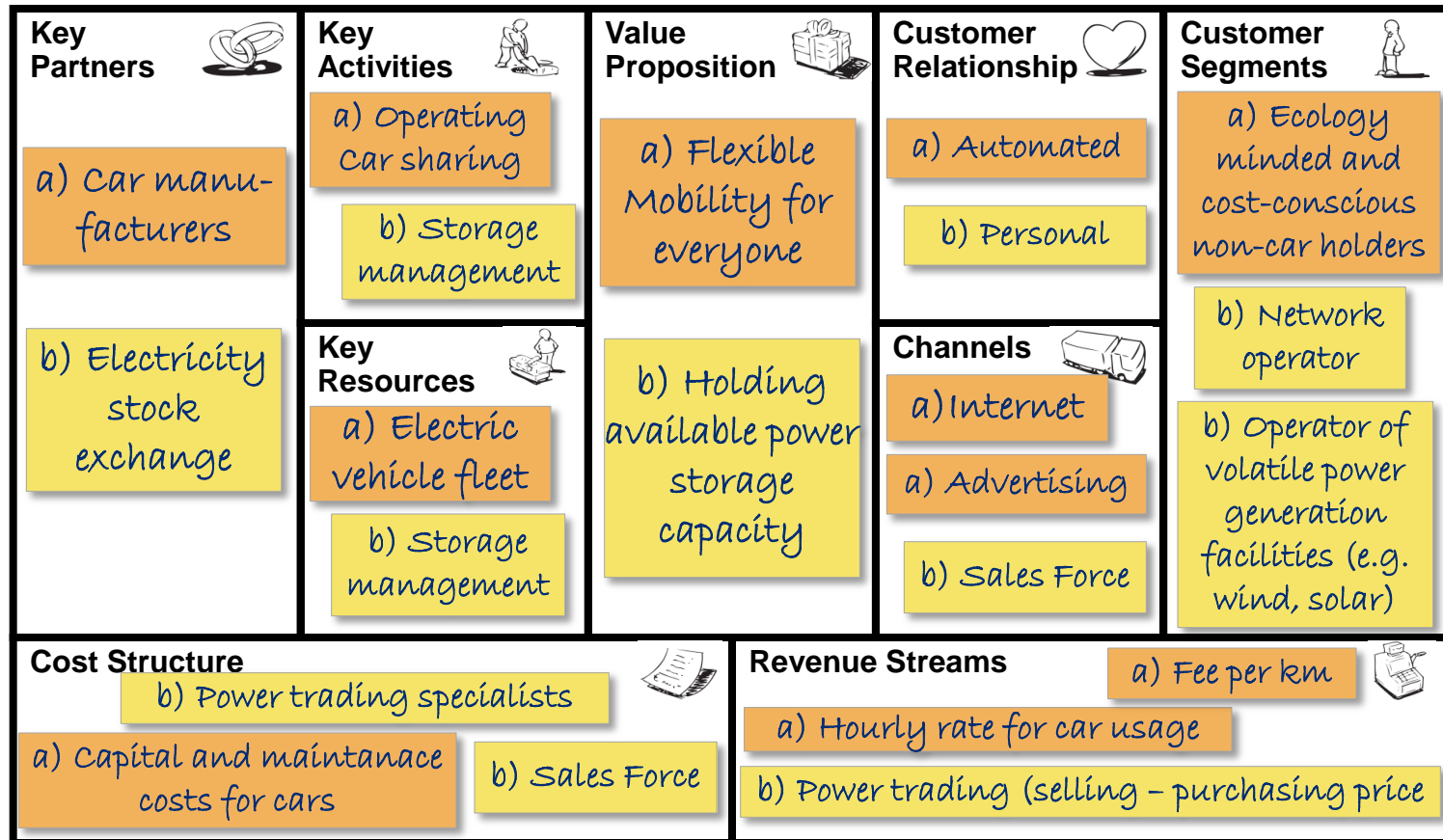
Brainstorming business model building blocks

| | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><h3>Key partners</h3><ul style="list-style-type: none">InsurancesHealth insurancesFederal network agencyInternational utilitiesGrid stability providersConfiguration providers (balancing group)ICT industryHome appliances manufacturersInternet service providersOwners of storage facilitiesUtilities from other network coverage areasCar manufacturersAutomobil suppliersOwners of emergency power generatorsOwners of distributed power generation facilitiesOwners of renewable power generatorsIPPs¹⁾</div> | <div><h3>Key activities</h3><ul style="list-style-type: none">Managing and optimizing the partner networkOperating E-Bike-sharing-fleetSelling of effective energy (cooking, heating etc.) instead of kWh„First Mover“Re-integration of supply chain3rd Party Integration (AAL²⁾, security, surveillance, ...)Broker generation/consumption</div> | <div><h3>Value proposition</h3><ul style="list-style-type: none">Added value for customersSexy productsLabeled electricity outlets (electricity mix per outlet)Price risk consulting and insuranceWireless electricity for public placesElectricity mix-on-demandGeneration & load forecastSecurity of supplySavings (CO₂, costs)Energy & automation - from a single sourceEnergy & telephone & TVIndependence (even from utility)„We manage your home“„We offer security“„Mobile“ electricity with SIM card</div> | <div><h3>Customer relation</h3><ul style="list-style-type: none">Online-community („who saves the most electricity“)Energy broker as partnerOnline-platform for constant selection of an individual electricity mix</div> | <div><h3>Customer segments</h3><ul style="list-style-type: none">Owners of low-energy/ passive housesCustomer segments according to customer behaviourCustomers with little timeCustomers in existing buildingsCustomers in new buildingsCustomers interested/ not interested in new technologiesEnvironmentally-conscious customersCost-conscious customersOwners of emergency power generatorsCustomers with own generating facilitiesStatus-conscious customers„Energy form-conscious“ customers (only nuclear power, only wind power...)Poor CustomersRich customersSeniors</div> |
| <div><h3>Cost structure</h3><ul style="list-style-type: none">Reducing costs for technologyIdeal technology for productsSaving costs for network maintenance („self-healing“ networks)Cost saving with automated meter readingComprehensive IT infrastructure</div> | <div><h3>Revenue generation model</h3><ul style="list-style-type: none">Process optimization (data verification, blocking and reblocking, collection, claims management, vacancy monitoring, meter inspection and maintenance)Better utilization/ more efficient operation of power plantsSupply from one source (heat, electricity, water, gas, internet, telefon, TV)Personalization/ individualized tariffsFlat-rate-electricityRevenues from other energy marketsProfitable tariffsRevenues fromCO₂-certificates for efficiency measuresTrade with power from storage facilitiesRevenues from price spreads/ arbitrage</div> | | | |

1) IPP = Independent Power Producer

2) AAL = Ambient Assisted Living

Business model idea: *Electric Car Sharing Service*



Group Work | Develop a virtual power plant project

Setting

- 8 - 10 students form one **team within an electric utility**
- Half of the team are **engineers at the utility's R&D department** (Technical Group)
- The other half are **business and product developers** at the utility (Business Group)



Extract from a speech of your CEO

*„...our revenues are melting away as **competition in our markets increases**. At the same time soaring fossil fuel prices, EU legislation and the need to tackle climate change force us to **become more cost and energy efficient**.*

*In order to adress these challenges we need to **develop new technologies, products and services** with a strong focus on sustainability. The company's commercial success, however, will depend on the development of **innovative business models...**“*

Group Work | Objective and actions

| | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective | Develop a concept for a virtual power plant, present your project idea to your company's executives and convince them to support it! |
| Deliverables | <p>(1) Business model concept considering the 9 building blocks</p> <p>(2) Specification of technical requirements, e.g.:</p> <ul style="list-style-type: none">▪ Which types of power plants do you want to include and why?▪ Which information and communication technologies are needed?▪ What could your virtual power plant look like (schematic diagram)?▪ What is the annual output/capacity? Other technical specifications? <p>(3) Argumentation how your project is addressing at least one of your company's innovation objectives:</p> <p>Create new revenues Reduce costs Become more energy efficient</p> <p>(4) Project outline including your next steps for the upcoming year, e.g.</p> <ul style="list-style-type: none">▪ Who do you have to talk with? Who do you need to negotiate contracts with?▪ Which competencies and resources do you need (to acquire)?▪ Which support do you need from the government/legislator?▪ Which technologies do you need to develop or buy?▪ What research projects do you need to assign? |

Contacts



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<http://www.sense.tu-berlin.de/>
<http://www.eict.de/>

Knab, S.; Strunz, K.; Lehmann, H. (2010):

Smart Grid:

The Central Nervous System for Power Supply - New Paradigms, New Challenges, New Services

Download: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1531655

Business model idea: *Virtual Power Plant (VPP)*

